

## PHYS 506

### Interpretation of Physical Measurements

- Evaluating Physics Results
- (How does one recognize "good" or "bad" results.)
- Fundamental Concepts – Probability
- Distributions
- Hypotheses Testing and Significance
- Goodness of fit
- Estimation Techniques
- Maximum likelihood
- Least squares
- Multiparameter Errors (correlation)
- Confidence Intervals
- Systematic Errors
- Time correlated analysis

### Selected Numerical Methods

- Numerical integration
- Monte Carlo Methods (and Random number generation)
- Function Minimization
- Finite difference methods
- Partial differential equations
- Diagonalization

### Advanced Topics (only a couple of these will be covered)

- Signal recognition – Wavelets
- Event (signal) recognition - Neural Nets
- Quantum Monte Carlo
- Solitons
- Non-linear models – chaos
- Fractals